

INOSSIDABILE

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Summary

For more detailed information please contact directly the names indicated at the end of each notification

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A BIKE WITH A STAINLESS STEEL FRAME BUILT BY BIKERS FOR BIKERS (Una moto con il telaio inox, costruita da motociclisti per motociclisti)

The DUU ("two" in the dialect spoken in Milan) is a unique model in the motorcycle industry world wide. This bike has been developed in the workshop of a small manufacturer of Milan. For the first time, two schools of excellence in the field of motorcycle construction combine into a single bike: the American school (as for engines) and the Italian school (as for chassis and design). This bike is available in two different versions: "Deperlu" (in the Milanese dialect "all alone", a single-seater) and "Cunlatusa" ("with the girl-friend", a two-seater). With an actual 1916 cc. displacement, the bike is 2,197 mm long and 770 mm wide, and has an empty weight of 245 kg. The DUU, like any other bike model manufactured by this Milanese maker, is widely customizable from the very beginning to customers' specific needs.

Engine – The distribution engine with two valves per cylinder (equipped with a hydraulic self-adjustment of the clearance), is characterized by the following performances:

- maximum power/rev 71 Kw/5100
- maximum torque/rev 148 Nm/4300
- maximum speed over 200 Km/h.

Chassis – The frame is a mixed structure. The main element consists of a large section (Ø108.0 x 2.1 mm) EN 1.4404 (AISI 316L) stainless steel tube, which performs the double task of backbone and fuel tank.

Boxed stainless steel elements, which are obtained from laser-cut and bent stainless steel sheets in thicknesses ranging from 1.5 to 8.0 mm, are coupled to the tube through TIG hand-made welds. The use of stainless steel provides lifelong guarantee against corrosion, and allows obtaining any kind of top-quality finish even on still unfinished materials. 20.3 kg of stainless steel have been used for the construction of the frame. The fork is a single element formed by a large section tube (Ø88.9 x 2.0 mm) made of AISI 316L stainless steel as well, reinforced by a stainless steel truss box, and weighs 7.6 kg. The whole assembly is entirely hand-welded through TIG welding process.

In addition, EN 1.4301 (AISI 304) stainless steel has been obviously used for both the exhaust system (10 kg) and for all trimmings, small parts and fasteners (approximately 2 kg).

Construction and production: CR&S Motorcycles – Vun e Duu are int. trademarks belonging to: O.M.M Srl (Officina Meccanotecnica Milanese) – I-20090 Cusago MI – V.le Europa 67, phone +39 02 36528740, fax +39 02 36528868, www.crs-motorcycles.com

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STAINLESS STEEL IS THERE BUT IT ISN'T SEEN (L'inox c'è, ma non si vede)

The aesthetical characteristics and corrosion resistance properties of stainless steel are well-known everywhere. In the sector of household electric appliances especially developed for home and industrial cleaning, considering their specific application range, aesthetics becomes however a characteristic of lesser importance than the overall equipment performance, and in particular, its resistance to scratches and subsequent oxidation.

Originally, the metal parts of a vacuum cleaner (we report some pictures for merely explanatory purposes) were usually made of nickel-plated cold formed carbon steel.

Using EN 1.4016 (AISI 430) stainless steel, a manufacturer of these vacuum cleaner parts has obtained the following advantages: economic advantages, due to their longer life and durability, since no oxidation process occurs after abrasion; environmental advantages, due to the complete recyclability of stainless steel. EN 1.4016 (AISI 430) stainless steel -

and in general all ferritic steels - has no particularly high elongation properties, but nonetheless this does not limit its cold forming possibilities. This company of Pistoia, Tuscany, which has been producing brushes and home and industrial cleaning accessories for more than fifty years now, succeeded in obtaining from EN 1.4016 (AISI 430) stainless steel some elements of rather complex geometry in spite of the limited bending radius imposed by the pre-existing dies.

Manufacturer: Spival S.p.A. – I-51036 Larciano PT – Via G. Marconi 214, phone +39 0573 859001, fax +39 0573 859002, office@spival.com, www.spival.com / **Stainless steel produced by:** ThyssenKrupp Acciai Speciali Terni S.p.A. – I-05100 Terni – Viale B.Brin 218, phone +39 0744 490282, fax +39 0744 490879, marketing.ast@thyssenkrupp.com, presaletcnico.ast@thyssenkrupp.com, www.acciaiatermi.it / **and distributed by:** Terninox S.p.A. - filiali di Firenze – I-50019 Sesto Fiorentino FI – Via Petrosa 15, phone +39 055 4491212, fax +39 055 4491231, info.terninox@thyssenkrupp.com, www.terninox.it

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FROM OUR MEMBERS THYSSENKRUPP ACCIAI SPECIALI TERNI GROUP TERNINOX

(Gruppo Thyssenkrupp Acciai Speciali Terni - Terninox) Terninox, which belongs to the industrial group Thyssenkrupp Acciai Speciali Terni, is a leading company marketing quality

stainless steel flat products. Marketed products concern in particular stainless steel plates, large and small strips, squares, and sheets, as well as welded tubes and pipes, flat sheared bars and connectors, for a total quantity exceeding 100,000 tons/year, which are distributed by the service centre of Ceriano Laghetto and by four warehouses based in Northern and Central Italy. The headquarters of the company are located at Ceriano Laghetto (in the province of Monza Brianza), while the registered office is located in Terni in the premises of the Italian parent company ThyssenKrupp Acciai Speciali Terni.

Thanks to the marketing and pre-sale technical assistance provided by the parent company, Terninox supplies stainless steels of the latest generation which, appropriately selected basing on their applications, offer customers the most suitable solutions made-to-measure to meet their specific requirements. The types of stainless steel proposed as a replacement for austenitic steels are usually not only stabilized ferritic steels (430TI, 439M, 441LI, 444) and structural steels (STR 12 and STR 18), but also the superferritic steels of the latest generation (460LI and 470LI) characterized by high corrosion resistance properties, in virtue of their high Chrome content (21 and 24 per cent, respectively). Superferritic 460LI and 470LI steels, produced through the vacuum secondary metallurgy technology (VOD – Vacuum Oxygen Decarburation), a process recently adopted by the steel mill of Terni, represent a winning and successful solution for all users who need a material capable to combine excellent performances – comparable to those provided by traditional austenitic steels – at more competitive and "stable" prices, due to the absence of Nickel, the market price of which has been subject for a long time now to extremely high volatility. Furthermore, in consequence of the introduction of 460LI and 470LI in the positive list of stainless steels which can be used for products coming into contact with food (Ministerial Decree 21 March 1973), the companies operating in the food industry represent in general a further reference area for superferritic steel applications. Terninox with its sales network has become a leading market actor for the development and promotion of these new steel products. Meeting customers' ever-changing requirements and needs, within a technologically advanced

and continuously evolving market area is today the main goal of this company.

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PHYSICAL CHARACTERISTICS OF STAINLESS STEELS

(Caratteristiche fisiche degli acciai inossidabili)

As well as its own peculiarities in terms of mechanical characteristics, each stainless steel family (whether austenitic, or ferritic, martensitic, and duplex) has its own specific physical characteristics. In particular, austenitic alloys are characterized by typical and specific physical parameters and values, which have to be carefully considered during the stages of material selection and product planning in order to avoid the risk to make gross mistakes, and to allow the production of works and products capable to ensure the highest performance levels.

Density, modulus of elasticity, coefficient of thermal expansion, thermal conductivity, specific thermal capacity, electrical resistivity: these are the main parameters listed in the EN 10088-1 standards, which describe the physical nature of the different stainless steel families, jointly considered.

Family	Reference Material	Density [kg/dm ³]	Modulus of Elasticity [GPa]	Coefficient of Thermal Expansion [10 ⁻⁶ °K ⁻¹]	Thermal Conductivity [W/m·K]	Specific Thermal Capacity [J/kg·K]	Electrical Resistivity [Ω·mm/m]
Austenitic stainless steels	1.4301 (304)	7.9	200	16.0	15	500	0.73
Ferritic stainless steels	1.4016 (430)	7.7	220	10.0	25	460	0.60
Duplex stainless steels	1.4462 (2205)	7.8	200	13.0	15	500	0.8
Martensitic stainless steels	1.4006 (410)	7.7	215	10.5	30	460	0.60

In the light of the numeric values included in this table, the article reports some comments concerning the characteristics of each family, which aim at explaining the different behaviours of these stainless steel types, stressing the need to identify specific solutions for each kind of finished product.

Finally, a specific paragraph is reserved to the magnetic properties of stainless steel for the purpose of pointing out the following concepts:

- Corrosion resistance is not related to magnetic properties;
- Austenitic steels, too, further to a hardening process, may show ferromagnetic behaviours;
- Ferromagnetism is not a quality index for stainless steel. On the contrary, it is an essential characteristic for some specific applications.

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A STAINLESS STEEL WINDING STAIRCASE: AN ARCHITECTURAL ELEMENT AND A DECORATING SOLUTION

(Una scala a chiocciola inox: tra complemento architettonico ed elemento d'arredo)

When we happen to visit a firm, the entrance represents for visitors a real business card of the company. For this reason, a firm based in Cuneo decided to build in its premises an entrance capable to identify its main characteristics and typical features through the aesthetical and architectural elements of the building. Obviously, EN 1.4301 (AISI 304) stainless steel plays a primary role in this project. For its new premises, the company built in the central part of the front of the building a semicircular full-length glass window in which a 6 m diameter winding staircase connecting the building storeys is housed. The structure of the glass window is formed by rectangular



tubular commercial profiles. Metallic connection parts obtained from steel sheet are joined to the structure in order to form the ledge of the glass windows and obtain complete watertight sealing.

The structure of the winding staircase consists in a central beam obtained from 6 mm thick steel sheets welded to one another to form a rectangular 550x500 mm section leaning on the lower slab and hanging from the upper slab without any intermediate support.

The upper part of the staircase has been made with a "multiple knee" structure, and 2 mm thick sheets have been welded to support the granite staircase-steps tightened through a concrete screw fastening system. The handrail is made of 48 mm diameter polished tubes supported by posts made of 129 mm diameter polished tubes as well, and is tightened to the ground floor and to the ceiling through a cushioning system to offset any expansion depending on thermal shocks.

Masonries design and planning: Studio di Ingegneria "Lerda" Via S.Maria 5, Cuneo / **Masonries execution:** Ditta F.lli Ferrero srl Via Martiri 63, Beinette CN / **Glass window and staircase design and planning:** Sig. Pier Ottavio Pavan President Cuneo Inox Srl / **Glass window and staircase execution:** Cuneo Inox Srl - **Offices and Production:** I-12100 Cuneo - Via Castelletto Stura 160/B, phone 0171 346165, fax +39 0171 401352; **Commercial Offices:** I-12040 Castelletto Stura - Via Morozzo 8, phone +39 0171 346165, fax +39 0171 346536, info@cuneoinox.com, www.cuneoinox.com

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STAINLESS STEEL PRESS-FITTINGS: A GUARANTEE OF AIR-AND-WATER-TIGHT AND EASY INSTALLATION

(Raccordi a pressione inox: garanzia di tenuta e facile installazione)

In setting up an industrial plant, joints and fittings are often considered accessory elements. As a matter of fact, they represent instead an important choice, an not only for the purpose of ensuring correct plant operation. In the area of industrial fittings, among the various available alternatives, the stainless steel market offers the so-called "press-fittings". All the press-fittings presented in this page are made of EN 1.4404 (AISI 316L) stainless steel and are complete with EPFM or FKM o-rings suitable to 1-2 mm thick pipes. These press-fittings fully conform to the Class 1 requirements provided for by UNI 11179 standards ("Press fittings for metallic pipes") and can be pressed with V-jaws (for diameters up to 54 mm) or M-jaws (for diameters ranging from 76.1 to 108 mm) installation equipment.

Due to their characteristics of easy fitting and use, these press-fittings can be used in a variety of industrial sectors. One of their main application areas concerns drinking water/ rain water pipes, where these fittings are applied to the water conveying plants of buildings and large civil works, as well as in plants for treated, distilled, osmotic, de-mineralized and de-ionized waters. The maximum admitted operating pressure of the fittings for this kind of plants is 16 bar, while maximum temperature is 110°C. Easy installation, high water- and mechanical tightness, excellent resistance against corrosion, as well as their wide application range are the main advantages offered by these press-fittings. In addition, they are all made of AISI 316L, a material which can come into contact with food (in compliance with Ministerial Decree of 21 March 1973), and obviously, with drinking water (in compliance with Ministerial Decree n° 174, 6 April 2004).

Manufacturer: FRA.BO S.p.A. - I-25027 Quinzano d'Oglio BS - Via Benedetto Croce 21/23, phone +39 030 9925711, fax +39 030 9924127, vendite@frabo.net, www.frabo.net

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AISI 304 PROFESSIONAL EQUIPMENT: A WELL-THOUGHT-OUT CHOICE AMONG DIFFERENT STAINLESS STEEL TYPES

(Attrezzature professionali in AISI 304: una scelta ragionata tra diverse tipologie di acciaio inox)

The world of stainless steel offers a range of products which considerably differ from one another in terms of characteristics, performance, quality and cost. It is therefore important that in choosing the most appropriate stainless steel type, end users are fully aware of what they intend to purchase, and able to select the product type which better conforms to the characteristics required by the final application.

To mention a significant example in the area of professional catering: a company of Padua, in the construction of its equipment developed for the catering industry, has made a choice based on quality, and differently from other

manufacturers, it makes use only of AISI 304 stainless steel. This company does not use, for example, austenitic Chrome-Manganese stainless steels (as AISI 202), which sometimes are proposed as alternative generic stainless steels without specifying their actual nature and performances. Though in the different industrial applications for which they can be used, these steels have apparently the same aesthetical characteristics as AISI 304 and are less expensive, their resistance against corrosion, compared to AISI 304, is by far smaller thereby involving a faster steel deterioration process. On the contrary, the stability of AISI 304 over time guarantees lifelong performances, and ensures maximum hygiene characteristics, which are essential for preserving any kind of products, and especially food.

Manufacturer: Cold Line - I-35030 Montemerlo di CSC PD - Via Roma 324, phone +39 049 9903830, fax +39 049 9903738, info@coldline.it, www.coldline.it - Mr. Gianluca Bagante / **Stainless steel produced by:** ThyssenKrupp Acciai Speciali Terni S.p.A. - I-05100 Terni - Viale B. Brin 218, phone +39 0744 490282, fax +39 0744 490879, marketing.ast@thyssenkrupp.com, www.acciaiarni.it

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THE ARCHITECTURAL STYLE OF A CITY: FROM BAROQUE TO STAINLESS STEEL

(Lo stile architettonico di una città: dal barocco all'acciaio inossidabile)

Ljubljana, the capital of Slovenia, is a picturesque city stretching along the banks of the little river Ljubljanica, and is considered the cultural, scientific, economic and administrative heart of the country. The architect Jozse Plecnik designed the city's famous market, which was built between 1940 and 1944. This market consists of a series of covered docks along one side of the river. A few years later, Plecnik planned also a monumental bridge to connect the market to the other bank of the river, but the bridge was never built. Today, the two sides of Ljubljana are connected by a footbridge, which though having been designed and planned more than hundred years ago, was only recently built basing on a more modern concept. This footbridge, reserved only to pedestrians and cycles, has been built making use of an EN 1.4301 (AISI 304) stainless steel frame in 10, 25 and 40 mm thickness, while the base is made of glass.

The footbridge has an overall length of 33 m and 17.3 m width. A flight of steps has been built on both ends to offset the difference in height between the two banks of the river.

The footbridge structure is formed by three major load bearing elements shaped on site as a shell, which are tightened to supporting towers. The footbridge weighs in total 230 tons.

Contractor: Atelier architetti - prof. Jurij Kobe, Samo Mlakar, Rok Znidarski and collaborators / **Stainless steel structure:** Meteorit d.o.o. / **Parapet and stainless steel elements:** Klemaks d.o.o. / **Pontoon and steel staircases:** UNIC SUB Ugo Fonda sp. in SUBS d.o.o.

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7th EUROPEAN STAINLESS STEEL CONFERENCE - SCIENCE AND MARKET

The 7th European Stainless Steel Conference - Science and Market, which will be held on 21-23 September 2011 in Como (Italy), is organized by AIM - Associazione Italiana di Metallurgia, in cooperation with Centro Inox and Politecnico di Milano - Polo Regionale di Como. Through this event, AIM intends to match and improve the positive and successful experience of the previous

European Stainless Steel Conferences, started by AIM in 1993 with the first meeting held in Florence (Italy). The Conference aims at gathering and sharing information on all the most important aspects of stainless steels production technology, such as hot and cold rolling, heat treatment and so on, with delegates who have both an academic and an industrial background. These developments will be linked to existing and potential applications and to other market-related factors, in order to set orientations to guide future developments. This event, which succeeds in bringing together stainless steel manufacturers and users, will allow comparing users' present and future needs with manufacturers' ability to satisfy these demands now or in the future.

The official language is English.

Organizing Secretariat: Associazione Italiana di Metallurgia - Piazzale Rodolfo Morandi 2 - I-20121 Milan - Italy, ph. +39 02 76021132 or 76397770, fax +39 02 76020551, e-mail: aim@aimnet.it

THE NEW CENTRO INOX'S WEBSITE IS ON-LINE (On-line il nuovo sito del Centro Inox)

It has been published the new Centro Inox's website with a new restyling and an update of the contents and of the implementation software. www.centroinox.it

TEKNOMOTIVE EXPO

Fair of Brescia, 20 ÷ 22 October 2011 (Teknomotive Expo - Fiera di Brescia, 20 ÷ 22 ottobre 2011)

The first edition of the international exhibition Teknomotive, the only Italian exhibition entirely devoted to materials, components, technologies and subcontracting in the transport industry, will be held at the Fair of Brescia from 20 to 22 October 2011.

This event is organized by Edimet in partnership with Brixia Expo-Fiera di Brescia. Centro Inox is one of the sponsoring organizations of this event. www.teknomotive.com

CONSTRUCTION PRODUCTS REGULATION (CPR) 305/2011

(Construction Products Regulation - CPR - 305/2011)

"Construction Products Regulations (CPR) 305/2011", the text of the new regulations concerning construction products formally adopted by the EU Council, was published on the European Official Journal on April 4, 2011. This regulation will replace the provisions included in the previous Construction Products Directive (CPD).

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A BREATHING BUILDING

(Il palazzo che respira)

Via Torino is one of the main streets of the town centre of Milan, an axis along and around which the radial structure of the city has developed and extended over time. At the corner with one of its side streets, Via Speronari, an old building needed to be urgently restored and renewed. The proposed solution consisted in creating an ever-changing and dynamic scenario on the whole façade of the building capable to reflect the soft, warm and shiny colours of the different seasons. The need to solve the problems related to pollution, traffic and uncontrolled building development, have instead inspired the idea to conceive the surface of this building as if it were a sort of layer of autumn leaves which aims at creating a natural, environment-friendly and... breathing façade.

The new façade is covered by a screen consisting of a metal carpentry structure supported by a grid formed by "double-T" steel beams.

For the lining of the façade it was decided to use 2 mm thick EN 1.4301 (AISI 304) steel sheet panels, which suitably punched and folded, ensure sufficient stiffness.

A number of sample tests allowed identifying deeply drawn stainless steel as the most appropriate material to be used for this purpose. The "Scotch-Brite" finish stainless steel sheet was perforated, shot-peened, and subsequently submitted to electro-colouring processes to sample.

The 742 panels made by punching and folding the pre-coloured stainless steel sheet forming the façade, through a computerized electric device can select the most appropriate slope. The micro-punched panels make the surface completely matt if it is observed at a certain distance, while inside the building, the panels are instead completely see-through. Furthermore, when the lining panels are completely closed, airstreams are conveyed, through a Venturi pipe effect, thus improving the building cooling in summer, while in winter they upgrade the thermal inertia of the casing.

Customer: Viris Spa / **Architectural project and project management:** Dante O. Benini & Partners Architects - I-20149 Milano - Viale Achille Papa 30, phone +39 02 33611663, fax +39 02 33611667, www.dantebeniniarchitects.com / **Outer casing, metal carpentry and shop windows:** Vetreria Busnelli Srl - I-20851 Lissone MB - Via Gandhi 3, phone +39 039 2454474, fax +39 039 2145073, info@vetriabusnelli.it / **Sample tests and perforated stainless steel sheets production:** Schiavetti Lamiere Forate Srl - Stazzano AL / **Stainless steel electro-colouring and shot-peening:** Steel Color Spa - Pescarolo ed Uniti CR

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